DOCUMENT RESUME

ED 102 108 SP 008 888

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TITLE	Nine Simple Steps Leading to Low Cost High Quality Individualization.
INSTITUTION	FILMS, Albany, N.Y.
PUB DATE	10 Jan 75
NOTE	73p.; Also available in French
AVAILABLE FROM	FILMS, 27 Norwood Street, Albany, New York 12203 (On loan)
EDRS PRICE	MF-$0.76 HC Not Available from EDRS. PLUS POSTAGE
DESCRIPTORS	*Affective Objectives; *Cognitive Objectives; Curriculum; Evaluation; *Individual Development; *Psychomotor Objectives; Resources; *Workshops

ABSTRACT

This document summarizes a curriculum workshop that defines individualization in terms of cognitive, psychomotor, and affective objectives. This definition is operationalized in objectives, evaluations, and resources keyed to nine individualization steps, which are documented by examples. A one-page planning matrix is used to sum up the nine steps, which are (a) outline goals briefly, (b) examine goals for relevance and validity, (c) move from subject matter to objectives, (d) reexamine criteria in light of career education implications, (e) field test the results, (f) categorize priorities for adaptation in learning package modules, (g) analyze each objective for mastery and beginner competencies, (h) analyze each evaluation to ensure it is an appropriate yardstick, and (i) analyze each resource to ensure a wide variety of alternatives. Several examples are given to illustrate applications to a wide variety of subject matter related to career education. (Author)

Title

NINE SIMPLE STEPS LEADING TO LOW COST HIGH QUALITY INDIVIDUALIZATION

Author

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Date:

January 10, 1975

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INTRODUCTION

IMPLICATIONS OF USING PERFORMANCE OBJECTIVES IN TEACHING

This document intends to show teachers how to individualize classroom instruction by clarifying day-to-day learner objectives and how to think in terms of what student performance should be as a result of instruction.

This document intends to influence teacher understanding of cognitive objectives. Cognitive objectives are found in the ideas and knowledge students are to learn. It is hoped that the readers of this document will start thinking in terms of observable student behaviors which apply newly acquired knowledge. This student-centered type of instruction stresses practicality rather than stopping at memorization of content and subject matter.

This document wants to influence teacher understanding of psychomotor objectives. Psychomotor objectives are found in the activities, actions, and performances students are to master. It is hoped that readers of this document will develop appropriate psychomotor objectives which make it crystal clear to the learners exactly where they can begin achieving complex skills.

This document wants to influence teacher understanding of affective objectives. An affective objective includes such things as values, motivations, and attitudes students are to learn. It is hoped that the readers of this document will begin to experience the feeling of success and accomplishment that comes from seeing lesson plans result in improved performance among students.

As far as knowledge objectives are concerned, improvement in student performance should be seen in more accomplishment than rote memory. As far as performance objectives are concerned, this improved student performance means that students will demonstrate a wide variety of skills as a result of more clearly stated objectives. As far as attitude objectives are concerned, this means that many students will start talking to others about the new and exciting things they have learned. This will illustrate the conviction that performance objectives can help both teachers and learners alike.

The objectives of this document are summed up in display 1 and display 2.

Display 1 sums up what a teacher should be able to do after reading this document.

Display 2 sums up what students should be able to do once performance objectives are used by their teachers.

Display 1

What a teacher should be able to do after reading this document

KNOWLEDGE -- Shift gears from content and subject matter to observable and measurable student performances.

ACTIONS -- Teach in such a way as to allow students to know what is expected of them.

ATTITUDES -- Experience feelings of success and accomplishment.

Display 2

What students should be able to do once performance objectives are used by their teachers

KNOWLEDGE -- Express ideas and understandings that were developed in a particular lesson.

ACTIONS -- Try out and use skills, powers, and activities that previously were not mastered and ready for application.

ATTITUDES -- Feel satisfied and enthused enough to develop inner resources which are now able to manifest themselves in a variety of newly actualized possibilities.

SECTION I

"USING PERFORMANCE OBJECTIVES"
INSTEAD OF
"WRITING PERFORMANCE OBJECTIVES"

It might be asked why this ment has stressed "using performance objectives" in its title instead of "writing performance objectives." The reasons for this deliberate choice can be summed up in five words: bibliography, instruction, priorities, professionalism, and self-improvement.

Bibliography: There is an abundance of literature both in book and in periodical format purporting to teach classroom teachers how to write instructional objectives. A "proper" behavioral objective format stresses observable performance, relevant conditions, and self-evaluative criteria. Two difficulties arise from reading such literature: (1) there is a large amount of it to read; and (2) the approach of the recommended work to be done by an instructor is of such detailed nature that much of it is not part of the life style of the typical teacher. Thus, the idea of "using performance objectives" is intended to encourage the typical teacher to teach differently rather than to write objectives differently.

Instruction: The primary pressure or objective in the day-to-day work of a teacher is instruction. As helpful as it might be to research and development in general, the physical act of writing out everything to be taught does not always have a high enough payoff in terms of increased student learning to be considered worth the extra paperwork.

The teacher under this system of teaching by performance objectives is not the person who handles the writing of everything to be taught. Thus, teachers are encouraged to use performance objectives rather than to write them.

In a similar manner, students are encouraged to go beyond rote memorization of subject content matter in order to start using and applying newly acquired knowledges, skills, and attitudes. In other words, students will be graded not upon their class notes, but upon what they do with newly mastered objectives.

Priorities: Most teachers have priorities in what they do to help learners. Typically, writing performance objectives in the format of conditions, performance, and criteria is not one of the highest teacher priorities, as the amount of time to do this is enormous.

Thus, many teachers write one or two performance objectives in complete detail in order to develop this process in their minds. However, they should not forget that it is much more important to use these clear cut and measurable goals than to write objectives that are left unused in dusty lesson plans.

Professionalism: A professional is someone who is highly trained in a particular service to others. In rendering this service, a professional relies upon two things: (1) training, and (2) daily updating. Training is something acquired before beginning a profession. No matter how thorough it may have been, most professionals are not satisfied with their training once they encounter the enormous challenges of their profession.

Daily updating is something a professional achieves everytime he does a better job. This daily professional growth is easy to spot: sometimes it is due to direct observations and unexpected discoveries; at other times it is due to ideas, techniques, and attitudes picked up from colleagues. Anyone who tries to claim credit for expressing the written

ideas of others in a written document of their own would be committing plagiarism. Anyone who tries to implant the successes of others in improved job performance is demonstrating professionalism.

From this point of view, therefore, the criterion of professionalism in education is quite simple: whatever can improve the success of students in the classroom and on the job should be utilized no matter where it comes from. If a personally developed teaching technique is less effective than something developed by a colleague, it is a professional obligation of a teacher to adopt the better approach. This presumes that a better approach will fit in with existing styles of teaching. Of course, the originator of this improved tactic or teaching strategy should be recognized and rewarded appropriately, at least with full credit for his contribution.

Self-improvement: Many teachers have discovered that one of the best ways to learn how to teach better is to start teaching. The demands of the subject matter, of the students, and of the teacher himself will inevitably suggest a better way to present a particular objective. This improvement will occur in methodology, in the evaluation instrument, in the use of media, and in the precision of the objective itself.

The teacher who cannot tune up his last performance is to be pitied since he is deprived of the excitement and fulfillment that goes hand in hand with better student performance.

From a practical point of view, it might be a waste of time for beginning teachers to spell out methodically and microscopically all his daily instructional objectives, the vast majority of which might change

from year to year, or from day to day. It is not unusual for beginning teachers to teach objective A one way in the morning to group X and to teach objective B another way in the afternoon to group Y. This is true even when there isn't always a large amount of difference between objective A and objective B because there is often enough difference between the two groups to require a different approach to the same basic performance. This individualization would be necessary even when both groups were in similar stages of development. This last example is intended to give only one or two dimensions of the typical self-improvement experience by teachers who continue to grow on the job. It is not unusual to find five or six other dimensions that must be given equal consideration.

Experienced teachers who have experienced self-development often go beyond assembly line techniques in a number of ways: creative goals, problem solving, preparation for the unexpected, and gains scores.

CREATIVE GOALS: Once basic educational goals are attained, teachers must stress process more than elementary products. This means that students must be taught how to think creatively.

PROBLEM SOLVING: The reason for this is simple: critical habits of thought allow a person to set his own goals. A man or woman taught to think creatively can solve a wider range of problems than those covered in basic skill goals.

PREPARATION FOR THE UNEXPECTED: A teacher who wants to stress self-development of students must deliberately prepare learners for the unexpected. Such learners will be able to go beyond mechanical and rote solutions.

GAINS SCORES: There are many ways to judge student success. In those instances where learning is equated with educational "gains," there are still many different kinds of educational progress. A knowledge gain is one thing; a performance gain, another; an attitude gain, still another. Teachers must be ready for all three types of gains.

Display 3 sums up section I in five short questions.

Display 3

QUESTIONS THAT MUST BE ANSWERED BEFORE WRITING PERFORMANCE OBJECTIVES

PRIORITIES	Which of the following will produce better results among typical students? A. WRITING OUT performance objectives B. THINKING OUT goals in terms of student behaviors and activities
BIBLIOGRAPHY	Which of the following is the more urgent instructional need? A. SPECIFYING student performances, foreseeable conditions, and self-evaluative criteria B. THINKING about how to gradually introduce clarity and precision into face-to-face encounters with students
INSTRUCTION	Which of the following is the effect precise evaluative criteria should produce in learners who understand course goals? A. Students start MEMORIZING more and more essential information that may someday be needed B. Students start THINKING up on their own activities and applications of concepts and skills needed to achieve learning success
PROFESSIONALISM	Which of the following seems to be a more usable teaching strategy? A. TRANSLATING existing goals into the format of performance, conditions, and criteria B. MODELING classroom instruction upon the best available techniques of colleagues that produce more benefits for students
SELF-IMPROVEMENT	Which of the following seems to be more practical for teachers? A. COMPLETELY revamping habits and performances that have given a certain amount of success over the length of a typical teaching career B. GRADUALLY redesigning teaching objectives, evaluations, and strategies into a more learner-centered framework

SECTION II

FIRST STEPS TO INDIVIDUALIZE COURSES AND LESSON PLANS BY USING PERFORMANCE OBJECTIVES

In this section, references are made to written lesson plans. The following pages do not intend to suggest that writing a lesson plan is more effective than thinking it out in the same format. Teacher should decide whether writing or brainstorming a lesson plan is more effective towards developing custom-made learner-centered objectives which help students understand, achieve, and value course goals.

Five steps aid teachers in making objectives more learner-centered, more observable, and more learnable:

Step One: The teacher outlines one course goal.

Step Two: The teacher examines this goal for the presence of important subject matter qualities.

Step Three: The teacher revises this goal.

Step Four: The teacher examines this goal for the presence of important learner-centered qualities.

Step Five: The teacher tries to teach this refined goal while learners try to learn this goal they helped formulate.

The following paragraphs explain each step in more detail and provide a brief overview of the important goal qualities under examination.

Step One: The teacher outlines mentally or on paper one brief course goal.

Step Two: The teacher examines each goal in the presence of learners to be certain each of the following subject matter criteria is present:

- up-to-date
- brief
- important
- clear
- photographable
- personalized

Step Three: The teacher revises this goal in light of the above criteria.

Step Four: The teacher re-examines the result of step three above to be certain each of the following learner-centered criteria is present in each goal:

- relevant
- attainable
- interesting
- challenging
- job-worthy
- expandable
- visible

Step Five: The teacher tries to use the results of step four as the basis for one or more class presentations.

The next few pages will examine each step in depth.

Step One: Each teacher outlines mentally or on paper a few brief and understandable goals for his course. This process is done before reading any farther in this document. This outline can be written down on a piece of paper or thought out without any need to write. The results of this outline process are evaluated with the criteria listed under step two.

There are many ways to profit from step one. Here are a few examples of what teachers have done:

Teacher A wrote up a list of new goals.

Teacher B sorted out some of last semester's lesson plans and underlined the objectives.

Teacher C looked over past exams and changed a few questions back into objectives.

Teacher D talked over course goals with both high achieving and low achieving learners.

Each of the above approaches and many others are acceptable as long as they prepare an individual teacher for step two.

Step Two: Each teacher checks each goal to see if it is in accordance with the following criteria. Each goal in accordance with a particular criterion is considered correct from the point of view of the criterion with which this goal statement agrees. If a goal is not in accordance with a specific criterion, the teacher recognizes the need for revision in order to make this goal statement agree with the criterion in question.

CRITERION 1

Up-to-Date Goals: An up-to-date goal, by definition, reflects the best scholarship and information currently available. As a rule of thumb, it can be advanced that a goal which has not changed in five or ten years is in danger of being out of date. Even though certain basic goals and skills do not always change, such as the rules of addition, it is the obligation of the teacher to make sure that all major course goals are currently up-to-date, based upon the best information professionally available.

CRITERION 2

Brief Goals: A brief goal is herein defined as a goal of 12 words or less. To apply this criterion, the teacher counts the number of words in each goal. When a goal takes more than 20 or 30 words, it is probably too complicated to make sense to someone else besides the author. In this case, the unnecessarily long goal is simplified in order to make it clearer and more to the point.

CRITERION 3

Important Goals: As herein defined, important goals refer to those goals which are among the top five to ten priorities for a course. Whenever more than five to ten goals are assigned to a one semester course, it is likely that the teacher has inadvertently mingled a number of secondary goals with the more important course outcomes. Valuable secondary course results can often be summed up in a few words. Whenever too many secondary goals are enumerated, the teacher tries to pull these subgoals together into larger goals. Thus, a few straightforward sentences can sum up the important goals of most courses.

CRITERION 4

Clear Goals: A clear goal, by definition, is expressed in easy to understand language. The teacher counts how many words of more than 10 to 15 letters he has in his goal statement. If many of the words in a goal are polysyllabic, shorter synonyms are used to replace these longer words in order to make more sense to a student or to a nonspecialist. In this way, more people can understand course goals. For example, more readers would have understood the sentence before last if it had used "long" instead of "polysyllabic" and if it had used "layman" instead of "nonspecialist." In other words, teachers shouldn't say, "Eschew verbal prolixity," when it is clearer to assert, "Avoid long words." Short staccato words sink in more deeply.

CRITERION 5

Photographable Goals: A photographable goal is defined as an easily observed performance. The teacher asks, "Could most people draw a picture or a rough sketch of this goal without calling in a professional artist or a creative genius?" If the goal isn't observable, measurable, and sketchable to the average person, then perhaps it's much too ambiguous and too vague. An abstract and unphotographable goal requires revision to make it more observable and photographable.

CRITERION 6

Personalized Goals: A personalized goal is defined as a reflection of its author's unique approach to education. The teacher asks, "Does one or more of these goals reflect an individualized approach to teaching and learning?" To make these goals more personalized, the teacher tries to propose course requirements and expectations in such a way that someone having nothing but these goal statements to go on could pick out the author of these personalized goals from other teachers trying to attain similar objectives. Personalized goals reflect an individual's teaching style. Mechanical, stereotyped, and dehumanized goal statements require revision in order to personalize the goals for each teacher who wishes to use a specific goal statement that reflects the educator's unique contribution to teaching.

Display 4 sums the important subject matter qualities evaluated in step two.

Display 4

Individualizing Criteria That Can Be Used to Make Course Goals More Understandable

UP-TO-DATE GOALS	These goals are much broader in scope than the objectives achievable in two or three days of instruction.
BRIEF GOALS	Each goal should be expressed in 20 words or less so that students will not be hung-up on words.
IMPORTANT GOALS	Five goals should be enough to sum up the objectives of a semester course.
CLEAR GOALS	These goals should be expressed in simple and precise words that avoid misunderstanding.
PHOTOGRAPHABLE GOALS	Each goal should be vivid enough and observable enough so that students could easily draw a sketch of it or photograph it.
PERSONALIZED GOALS	At least some of these goals should reflect the teacher's own individual approach to teaching as well as his own inimitable style.

After this evaluation which constitutes the essence of step two, the teacher is now ready to begin step three which translates this evaluation into specific changes in course goals.

Step Three: The teacher rewrites course goals in light of the above criteria. This is done only for those criteria with which the teacher agrees. A teacher agrees with a criterion when this criterion improves the clarity of the understandability of a course goal statement. When a teacher disagrees with a particular criterion, the teacher rewrites course goals in the way the teacher considers most understandable to incoming students.

The teacher who rewrites course objectives with the above individualizing criteria in mind finds teaching becoming more effective. Visualizing things a teacher can do in the classroom and things students can do at home or on the job is one way to individualize course goals.

A teacher who starts teaching with custom made goals has a unique speaking vocabulary. In this unique vocabulary, active verbs replace abstractions; clear cut explanations help students comprehend previously hazily understood terminology. Students then bombard teachers with insightful questions. The teacher's replies to these demanding questions become more impressive because only one idea or activity is stressed at a time. Students start noticing that visible and observable activities are the important items on the agenda. Similarly, other considerations such as terminology and demonstrations become important only insofar as they improve the learner's ability to do things that would have been undoable at the beginning of the course.

The teacher's attitude changes after experiencing the feeling of power that comes from being able to express course goals clearly. Clarity of purpose motivates people to do, or a least try out, the things the teacher is proposing. The teacher notices that people -- students, parents, administrators, and the general public -- begin to understand important course outcomes. With this type of success, it doesn't take the teacher long to notice how this improved understanding of course goals expresses itself in greater cooperation and teamwork.

People cooperate with a teacher who provides acceptable course goals. Learners identify more with a teacher's objectives when the goals proposed are relevant and understandable. When this occurs, teachers and learners are all on the same team. Both are planning together. This cooperation contributes to the attainment of other successes through improvisation.

These benefits to the teacher are summed up in display 5.

Display 5

What a Teacher Does When He Starts Developing Goals to Individualized Specifications

KNOWLEDGE	Visualize activities students can do as practical applications of learning objectives.
ACTIONS	Tailor classroom presentations to the interests, skills, and previous accomplishments of the particular group of learners with which he is working.
ATTITUDES	Experience the feelings of power and self-actualization that accompany the completion of a predetermined goal or objective.

Upon satisfactory completion of the above activities in display 5, the typical teacher doesn't automatically write behavioral objectives or performance objectives according to acceptable editorial standards of conditions, performance, and criteria. The above benefits to the teacher can provide powerful motives for the average teacher to take the extra time and effort necessary to write performance objectives.

When a teacher begins to specify course goals, it is possible to discover many ways to attain these desired outcomes. It's the same way with students; when learners know what the teacher expects, learners are better able to give observable proof demonstrating attainment of these mutually desired objectives. Teamwork is important in education whether it is with colleagues or with students. Teamwork is ordinarily impossible unless the members of a team know and share various goals and objectives in common.

After the teacher establishes the general directions to be taken during the coming semester, it is necessary to start thinking in terms of day by day instruction. Overall course goals provide a sense of direction for the next few months. With this general intention in mind, it is next necessary to trace out the steps to be taken to get there. This planning of the next thing to do leads into step 4.

Step Four: The teacher revises overall course goals from the point of view of the student to determine whether they are relevant, attainable, interesting, challenging, job-worthy, expandable, and visible.

The word "revises" should not be confused with "rewrites." The criteria summed up in the above string of adjectives are expressive of goals that should be implicit in written objectives and in mentally thought-out objectives. The important thing here is not merely to rewrite overall course goals. It is more important to be sure that course goals, no matter how developed, are capable of providing learner insights, profitable classroom performances, and necessary attitudes. The teacher who carefully chooses overall course goals is often surprised by how much has been unwittingly included in a few brief sentences which sum up years of successful teaching experience and map out even better plans for the future.

In a similar vein, the words, "from the point of view of the student," give the teacher a sense of direction and purpose. In the classroom, the teacher's job is not to impress the students with how much the instructor knows or with how well course goals are written. A teacher with doable goals helps learners say, "I learned," rather than, "I was taught."

Chances are that short statements of course objectives are easy for students to memorize even though these same goals will take all semester to accomplish in terms of newly acquired viewpoints, tasks, and values. It is likely on the first day of class that new students will not understand these pithy sentences as well as the teacher does. It is the teacher's job to make sure that, at the end of the course, all important goals are understood and mastered.

It is not unusual for alumni to forget both the names and goals of former teachers. There are other teachers who will never be forgotten. The memory of these unforgettable teachers is kept alive by one or two very specific souvenirs. Some former students recall ideas, skills, attitudes, and performances learned from effective teachers who used clear cut course goals. Less productive teachers are sometimes recalled by a number of things which have no relation whatsoever with worthwhile educational goals. Each teaching-learning encounter is unique in itself and in its impact. Worthwhile goals are remembered by learners who have mastered doable course objectives. Today's teacher will be judged by the same criterion tomorrow. Learner-centered goals lead to happier memories. The following criteria lead to learner-centered goals.

CRITERION 7

Relevant Goals: A relevant goal is defined as a course goal perceived by students as pertinent to student anticipation and expectations. When students perceive a course goal as relevant, they feel that this course goal is unforgettable because it is seen as a good use of available study time and as a good preparation for the lifetime goals of individual learners. A possible test of course relevance suggests itself to professional teachers. These teachers ask students their reasons or goals for taking a course. These teachers do this before presenting teacher developed goals. The answer to this question can surprise teachers in one of two ways: (1) student goals might be very similar to teacher goals; (2) student goals might be so much better or better expressed than scholarly teacher goals that some educators find themselves adopting several student-formulated objectives. This goal adoption process makes learning a two-way street. Once a teacher starts incorporating student developed goals into course requirements, the teacher and student both find themselves making more progress. Not only is more

subject matter mastered, but more ways are found to get students involved in achieving important objectives. In the presence of this increased learning, teachers and students begin to feel the thrill that comes from using other tools than superior knowledge as the main ingredient of classroom teaching strategy.

CRITERION 8

Attainable Goals: An attainable goal is defined as a course goal that is perceived by students as possible with the expenditure of normal effort. When students recognize course goals as attainable they are expressing an awareness and an attitude. Learners are aware of what the teacher expects students to accomplish. Learners also have the attitude or impression that these course goal expectations are indeed possible for normal learners. An attainable course goal presents new understandings, skills, and values that are within the reach of typical students. A student who feels the objectives of the course are attainable is thereby encouraged to work as hard as possible. This is a step in the right direction since a discouraged student can interrupt the normal progress of a class in a number of ways that can frustrate even the most relevant goals and objectives.

CRITERION 9

Interesting Goals: An interesting goal is defined as a course goal which can arouse student interest and hold student attention during the time period necessary for mastering. Some students have a habit of dreaming in class. When a student daydreams instead of learning, the student is telling his teacher that private vagaries are more interesting than anything the teacher is proposing as a valuable course goal. One of the best remedies against daydreaming is to get students dreaming about what

can be achieved after the attainment of course objectives. Students need help to enunciate fuzzy personal career goals. For example, a student just beginning to spell out career implications of a course tends to come up with general goals such as, "I want to get a job I will like." Once a student starts to pinpoint career dreams and future aspirations, the student prefers such goals as, "I want a job that offers me the chance to get ahead in life in a lot of different ways." Dreaming has many things in common with planning that can be seen in this last sentence which offers an example of an evolving learner goal.

CRITERION 10

Challenging Goals: A challenging goal is defined as a course goal that brings out the best potential in the normal learner. Learners like challenging goals just as much as they like challenging jobs. In the typical employment office, many available jobs go without applicants because these jobs are perceived as requiring little skill and as offering little future satisfaction. Students don't want to be trained for such work because there is little or no possibility of advancement. Followup studies indicate that the average high school graduate will make four or five major career changes in a lifetime. If this learner is taught as if he will have the same entry level job until retirement, it is likely that teachers are building course objectives on a weak foundation. A little error in the beginning of a school year can cause trouble later on. Therefore, teachers can help learners and avoid learner distraction by concentrating on challenging course goals.

CRITERION 11

Job-Worthy Goals: A job-worthy goal is defined as a course goal which prepares a student for an entry level job which can lead up a career ladder. For a fresh perspective in determining whether a specific goal is job-worthy or not, teachers can ask the following question, "How much is this student worth per hour upon mastery of course objectives?" If the hourly wage is low, this is a signal to the teacher to revise the course goal upward. The point is not to stress monetary considerations above all others. The idea here is to realize that money is one of many ways to keep score. Salary scales provide comparisons that are easily understood by students and lamen alike.

CRITERION 12

Expandable Goals: An expandable goal is defined as a course goal which permits a learner to move upwards or sidewards in a career lattice. Moving upwards in a career lattice refers to promotion in the same job type. Moving sidewards in a career lattice refers to lateral transfers within the same general job family. Undoubtedly, there is not a single learner in school who wants to get tied down or frozen into a dead end career. To avoid any unhappy misfits between teacher goals and learner expectations, professional teachers try to visualize what will happen to a graduate after obtaining an entry level position for which a particular course is relevant.

If a specific objective is so limited and precise that it resembles a dead end sign rather than something upon which to build a career, then the teacher's job is to make the necessary changes and enrichments. In other words, the teacher expands the career implications of the goal in question so as to make this goal more valuable to learners. The teacher can do this by aiming at high priority generalizable knowledges, skills, and attitudes that are applicable to more than one job title and to more than one job family.

CRITERION 13

Visible Goals: A visible goal is defined as a course goal that can be visualized by the learner even before completely mastering this new objective. To test goal visibility, some teachers look through their files and try to picture former students carrying out prominent course objectives. Goals that are discovered to be too abstract to be photographed are revised and made more observable. All camera-ready goals are kept on file, ready for use. The reason for this is simple: students won't be able to visualize an objective that requires much study to achieve unless the teacher goes out of his way to render this objective more concrete and tangible to beginning students. Even the partial visualization of certain knowledge and attitude goals will tax a teacher's imagination in such a way as to make learning less mysterious and more obvious.

Step Five: The teacher develops a few overall course goals into a format that gives precise directions for one or more classroom presentations.

While doing this, it is a good idea for teachers to go beyond abstract ideas they may have heard and read about behavioral and performance objectives. At least, teachers shouldn't use abstract terms in front of unprepared students who might be scared off by scientific names for such common sense ideas as visible learner-centered activities.

The following observations may make it easier for teachers to apply step five:

1. Course goals written by expert teachers are often fuzzy concepts. These goals are not necessarily fuzzy to the experienced teacher. They are fuzzy to inexperienced learners and hard to imagine for beginning students.
2. Course goals edited by teachers in order to make daily objectives more observable to students often become more understandable. This editing helps make these goals more attainable. This editing doesn't require a large amount of writing even though success at editing does require a large amount of practice.

Trying to do the following allows teachers to test out a few good starting points for this necessary practice:

1. The teacher breaks down each course into its larger sections.
2. The teacher breaks down each of these larger sections into its subdivisions.
3. The teacher develops daily classroom objectives as well as he can.
4. The teacher develops at least one evaluation instrument for each objective.
5. The teacher specifies at least one learning resource for each objective.
6. The teacher looks around at what teachers of similar courses are doing to teach, to evaluate, and to motivate learners with these goals in mind.

As a result of the above six activities, even teachers who don't change as much as a comma of what they have previously written are in a better position to ascertain two important rules of thumb in teaching:

- One teacher's individualized way of teaching is not the only possible way to attain specific objectives.
- One teacher's repertoire of appropriate techniques can be increased by observing effective teachers.

These rules of thumb have implications for evaluation:

- Evaluation is not only something someone does to someone else.
- Evaluation is something each person must do to and for himself.
- Evaluation is something learners can do to and for themselves.

SECTION III

AN EXAMPLE OF WHAT ONE TEACHER DID AFTER READING STEPS ONE TO FIVE

The following example shows what a teacher of auto mechanics did after reading Section II in order to make course goals more observable and measurable by using the first five steps of individualization.

Step One: "I want to teach my students how to repair fuel and ignition systems. I want to be able to get a job immediately after graduation. I want them to be well-disciplined enough so that they will be able to get along with others on the job."

Step Two: "I stress basic vocabulary and fundamentals more than other teachers."

Step Three: "I don't think it makes any difference if I write 'I teach' or if I write 'my students learn.' The important thing is to concentrate on diagnosis and repair."

Step Four: "A good mechanic doesn't have to worry about his skill landing him in a dead-end job."

Step Five: "The following list of objectives:

1. To identify and name fuel lines and fittings.
2. To service fuel filters and lines.
3. To explain the operation of various types of fuel pumps.
4. To diagnose fuel pump problems.
5. To remove and replace fuel pumps properly.
6. To explain the operation of fuel guages.
7. To diagnose and correct fuel gauges.
8. To explain the repair of fuel tanks.
9. To be convinced of the danger of repairing fuel tanks by oneself.
10. To explain components and service of exhaust systems.
11. To realize that carbon monoxide from automobile exhaust is a deadly gas."

The preceding eleven objectives stress the order of classroom presentation. With this guide in hand, the teacher is able to supply the subject matter and classroom activities needed by students.

Discussion with this instructor, concerning the details of these eleven objectives, reveals that the conditions under which many of these objectives are to be met include such things as "at the end of this unit, during training, and on the job." The standards for many of these performance objectives are "manufacturer's specifications."

With these conditions and standards, the teacher is now ready for step six which will help systematize the results of step five. Step six is appropriate after a teacher has tried to teach newly refined course goals.

Step Six: The teacher analyzes course goals in order to distinguish three categories of objectives: Knowledge Objectives, Performance Objectives, and Attitude Objectives.

Analysis of the previous list of objectives reveals that objectives 1, 3, 4, 6, 8, 10, and the first half of 7 are knowledge goals that stress basic knowledge data. Objectives 2, 5, and the last half of 7 are knowledge goals that stress performances, activities, and things. Objectives 9 and 11 are attitude goals that stress attitudes necessary for job success and how to get along with other people.

After this threefold analysis, the teacher places course goals in schematic format in such a way as to place knowledge, performances, and attitudes in proper relationship to one another. Display 7a shows the results of this first schematization attempt. Display 7b, a few pages later, puts the results of Display 7a into a format showing inter-relationships between course goals.

The following pages of Section III and the entire content of Section IV assume that an educational system is simply an organized approach to tying together targets, tests, and technology in such a way as to foster feedback that can lead to increased teacher effectiveness as measured by increased learner success. In this context, targets include goals and objectives; tests include evaluation instruments and examinations; and technology includes instructional resources and media.

From this larger perspective, Display 7a and Display 7b are intended to suggest easy to do organizational patterns for targets, goals, and objectives.

Display 7a

First Schematization: Unit Goals For Carburetion

Data-Centered Knowledge Goals	Thing-Centered Performance Goals	People-Centered Attitude Goals
Identify and name fuel lines and fittings. Explain the operation of various types of fuel pumps. Diagnose fuel pump problems. Explain the operation of fuel guages. Explain the repair of fuel tanks. Explain components and service of exhaust system. Diagnose fuel guages.	Service fuel filters and lines. Remove and replace fuel pumps properly. Correct fuel gauges.	Be convinced of the danger of repairing fuel tanks by oneself. Realize that carbon-monoxide from automobile exhaust is a deadly gas.

The preceding Display 7a allows the teacher to divide course objectives into three categories: knowledge objectives, performance objectives, and attitude objectives. This separation into three categories or domains forces the teacher to decide the primary emphasis of each objective exactly as written. After this first analysis, the teacher is in a better position to systematize course objectives. After the systematization process, the teacher is ready to inter-relate course objectives.

Here are a few examples of inter-relationships. The teacher begins to notice that one knowledge objective (identify and name fuel lines and fittings) and one performance objective (service fuel filters and lines) are related. The teacher also notices that there is no corresponding attitude objective written out which will relate to this knowledge objective and to its correlated performance objective.

Similarly, the teacher notices the relationship between one knowledge objective (explain the operation of various types of fuel pumps) and another knowledge objective (diagnose fuel pump problems). There two knowledge objectives are in turn related to a performance objective (remove and replace fuel pumps properly). Further investigation reveals no written attitude objective that correlates to these knowledge objectives and to the correlated performance objective.

Continuing down the list of knowledge objectives, the teacher notices the relationship between one knowledge objective (explain operation of fuel gauges) and another knowledge objective (diagnose fuel gauges). Further investigation reveals that written objectives include neither a correlated performance objective nor a related attitude objective.

As the teacher continues to analyze written objectives, the relationship between another knowledge objective (explain repair of fuel tanks) and an attitude objective (be aware of the danger of repairing fuel tanks alone and without expert supervision) is noticed. Further investigation does not reveal the existance of a written correlated performance objective.

Finally, the teacher correlates the last remaining knowledge objective (explain components and service of exhaust system) with an attitude objective (realize that carbon-monoxide from automobile exhaust is a deadly gas). There is no written performance objective to correlate with this pair.

Display 7b sums up the above observed relations and correlations in order to provide an overview. This overview shows the teacher in one glance what is available in existing materials and what needs to be developed. Thus, this second schematization provides an x-ray of course goals and objectives. Before filling in the blanks evident in Display 7b, a few paragraphs are devoted to the advantages of this type of schematization.

Display 7b

SECOND SCHEMATIZATION: UNIT GOALS FOR CARBURETION LESSONS

	KNOWLEDGES (cognitive goals)	PERFORMANCES (psychomotor goals)	ATTITUDES (affective goals)
Goal 1	KO-1 Identify and name fuel lines and fittings	PO-1 Service fuel filters and lines	AO-1
Goal 2	KO-2 Explain operation of various types of fuel pumps Diagnose fuel gauges	PO-2 Remove and replace fuel pumps properly	AO-2
Goal 3	KO-3 Explain operation of fuel gauges Diagnose fuel gauges	PO-3	AO-3
Goal 4	KO-4 Explain repair of fuel tanks	PO-4	AO-4 Be aware of the danger of doing it alone without expert supervision
Goal 5	KO-5 Explain components and service of exhaust system	PO-5	AO-5 Realize that carbon-monoxide from automobile exhaust is a deadly gas

KO = KNOWLEDGE OBJECTIVE (DATA-CENTERED)

PO = PERFORMANCE OBJECTIVE (THING-CENTERED)

AO = ATTITUDE OBJECTIVE (PEOPLE-CENTERED)

Advantages of Display 7b Schematization

The objectives presented in Display 7b do not differ very much from the eleven objectives previously presented. However, several advantages do emerge from the type of presentation found in Display 7b:

1. The beginning student is able to place all eleven of the course goals in perspective. This can be done at a glance by simply looking over the objectives in Display 7b.

2. The beginning student is made aware of the structure of this particular segment of classwork. Rather than eleven unrelated objectives, a simpler and more basic configuration of five basic areas is presented. No doubt, this fivefold design was in the teacher's intentions as an experienced teacher. Yet, if this teacher presents eleven apparently unrelated statements, chances are that students overlook the logical simplicity which doesn't always appear so obvious to a beginner.

3. The beginning student analyzes the overall goals into component parts merely by looking at Display 7b. The coding of Display 7b becomes obvious. The prefix K stands for knowledge; P for performance; and A for attitudes. The suffix O stands for objective. For example, the learner sees that goal 1 is really a combination of knowledge objective KO-1, the related performance objective PO-1, and attitude objective AO-1. This is evident even though the attitude objective AO-1 has not been explicitly written out. Alert students begin to suspect that there is a basic set of mind.(in this case, attitude objective, AO-1) essential to apply knowledge objective KO-1 and performance objective PO-1 to actual on-the-job situations. This coding is easy to remember: KO = Knowledge Objective, PO = Performance Objective, and AO = Attitude Objective.

4. The beginning student is able to ask intelligent questions, for example, "Why don't we say that we intend to repair fuel tanks." To this question, the teacher replies, "Because it is too dangerour except for a specialist." In turn, this forces the teacher to spell out the fact that the learner's on-the-job performance will be "to hire out fuel tank repair work to a specialist." This application is quite obvious to the experienced teacher.even when the teacher never comes out and says it. The obvious advantage here is that, when students understand what the teacher wants, students are able to do more in the learning process than listen. Students then go on to ask the kind of questions that bring out the expertise and experience of an experienced teacher.

5. Learning becomes a two-way street. The beginning student absorbs in a few hours in the classroom things it took the instructor years of study and work to learn. This learning goes beyond more memorization of text and lectures since it is centered on objectives which build up a well balanced diet of knowledge, performances, and attitudes. As a result of this learning by objectives, teachers learn more about how to get the point across to the average student.

6. Learning becomes a challenging activity. Rather than give a strictly academic lecture on the operation and diagnosis of fuel pumps, the instructor builds up a certain sense of the dramatic by demonstrating one situation after another in which the fuel pump seems to be defective when in reality something else needs attention. It is more important for students to have this attitude of interest and the corresponding feelings of suspense than merely to memorize that "apparently defective fuel pumps are often in good condition."

Display 8 completes Display 7b with a more complete schematization and thus adds to the above advantages.

Display 8

THIRD AND MORE COMPLETE SCHEMATIZATION OF COURSE GOALS

	KNOWLEDGE (cognitive goals)	PERFORMANCES (psychomotor goals)	ATTITUDES (affective goals)
Goal 1	KO-1 Identify and name fuel lines and fittings	PO-1 Service fuel filters and lines	AO-1 Willing to take enough care to do a precision job
Goal.2	KO-2 Explain the operation of various types of fuel pumps	PO-2 Remove and replace fuel pumps properly	AO-2 Be sure pump is actually at fault since many other problems simulate a defective fuel pump
Goal 3	KO-3 Explain operation of fuel gauges Diagnose fuel gauges	PO-3 Remove, correct, and replace fuel tanks, air cleaners, fuel gauges	AO-3 Realize the dangers of faulty diagnosis
Goal 4	KO-4 Explain repair of fuel tanks	PO-4 Hire out fuel tank repair work to a specialist	AO-4 Be aware of the danger of repairing fuel tanks yourself
Goal 5	KO-5 Explain components and service of exhaust system	PO-5 Service exhaust system Take steps necessary to protect car owner and passenger	AO-5 Realize that carbon monoxide from automobile exhaust is a deadly gas

Display 8 gives a revised and more complete version of Display 7b. It incorporates the advantages discussed above. This does not imply that these goals are finally in unalterable form or in a ritualized format. The main idea is that goals in the schematization format of Display 8 can effectively convey more highly organized information about course goals to beginning students. Display 8 has more words than the eleven goals presented previously. Display 8 expands the pithy summary found in the eleven goals by spelling out all learning implications. The trouble with pithy summaries is found in the fact that the beginner, who doesn't know how to read between the lines in the teacher's discipline, can easily become confused.

Display 8, like Display 7b which preceded it, is designed for the student. It is an attempt to spell out, in an orderly and simplified presentation, exactly what is expected of the student in each course. Rather than presume that students see the obvious connection between knowledges, performances, and attitudes necessary for success in working with others, each of these parameters is made explicit.

Quite likely, a teacher presented with this information from another teacher reacts with interest and criticism. The interest is there because every professional teacher likes to know what others are doing in the same course. The criticism is there because every teacher has certain goals, methods, and convictions which are seldom found exactly duplicated in someone else. Many teachers naturally enough prefer to individualize. Any reader or any teacher who has different ideas for the unit summarized in Display 8 is free to cross out unacceptable components and to write in material more appropriate to local teaching styles and to student learning styles.

THE SYSTEMS APPROACH: Objectives, Evaluation, and Resources:

Evaluation Implications of Display 8

Most teachers have a simple method of test construction. A teacher lists in detail course objectives and then develops a testing instrument that samples the most important course goals. Sometimes, this is done very systematically. For example, a teacher writes each detail of each course on an index card; on the reverse side, a sample evaluation item is spelled out. Even if each course detail does not receive a specific test question or performance examination item, the vast majority of the course is ready for the sampling necessary for evaluation. This is the first part of any system: organization.

A teacher who employs the format found in Table 8 samples all important unit goals, including attitudes and performances, that are implied in competence. Rather than merely stay with conventional written examination methods which function moderately well for evaluating knowledge acquisition, this teacher is able to sample essential performances necessary for on-the-job application. In addition, this format helps the teacher evaluate the practical importance of attitudes. Attitude evaluation is a difficult area. The mere fact that the teacher comes to grips with this attitude measurement problem is a step forward to more objective evaluation data than the data provided by typical "grit feelings" about a particular trainee or student. In addition, once a teacher begins to think about attitude goals, the teacher may find he is ready to discover and try out ideas suggested by colleagues. This is the second part of any system: feedback and evaluation.

Evaluation becomes the simpler question, "How is success documented and measured?" This question ties the system together.

Resource Implications of Display 8

Instructional resources include a number of things:

One of the most obvious instructional resources is what to say to students. If the teacher says too much, learners turn off after a time. If the teacher says too little, learners miss the secrets and depths summed up by the teacher in a few words.

Another instructional resource is what the teacher writes or draws on the blackboard. Sometimes, a diagram with a few key words goes a long way in getting a difficult point across. At other times, it is the step-by-step development of the drawing that is more valuable to the student than simply studying a more complete and more complicated illustration in a text or on a duplicated page.

Another instructional resource is the textbook. Reading is a basic knowledge source. A good way for the teacher to maximize textbook utilization is to pinpoint specific pages of books that are understandable to students and that stress exactly the objective under consideration.

In a similar vein, slides and illustrations help attain objectives. Many teachers develop over a bank of time slides, transparencies, and illustrations that help attain the exact objectives sought after in each unit. If other teachers have access to all this material developed and tested by experienced teachers teaching the same goals, the task of individualization is made easier by sharing discoveries.

Movies are another good source especially when the concept and awareness of motion are necessary components of a particular knowledge or performance. One difficulty with films is that a film carefully and painstakingly designed by one teacher may be geared to objectives that are not part of another teacher's plan of attack. This lack of fit could be lessened by having a list of films specified by objectives rather than by general subject matter.

Videotapes can be used by teachers to point out activities that must be learned step-by-step and then performed in a continuous sequence by the learner or trainee. With videotape capacity, teachers benefit from instant replay and slow-motion.

When spelling out his objectives, a teacher begins to think in terms of a system. Without a system, many teachers merely teach till exam time when it is time to shift gears and start thinking about test questions. As the next step, a mental note is made of what to change in daily lesson plans the next time around. With a system, things are done differently. The teacher thinks of course objectives, criterion examinations, and instructional resources at the same time as part of a coordinated process.

A system doesn't automatically solve all problems the first time around. Yet a system works on several problems simultaneously without creating frantic pressures that lead nowhere. As in the development of Display 7b, a system helps pinpoint gaps in either objectives, evaluations, or resources. Once missing components are clearly identified, the teacher with a system is in a much better position to take positive corrective action. This is what a system is all about: it means a coordinated approach to classroom instruction. This coordinated approach insures that anyone part of a course is not taught or developed in vacuum. Each component is part of a systematic approach which unites (1) personnel, (2) processes, (3) instructional resources, (4) goals, (5) evaluation, and (6) communications into a concerted effort towards a common purpose.

In a systems approach, <u>personnel</u> includes students, teachers, supervisors, and administrators not as opponents or as members of a hierarchy, but as members of the same team. <u>Processes</u> include many ways these people work together to achieve mutual goals. <u>Resources</u>, even when called educational technology, are simple the visible ways knowledge can be applied to attain

clearly defined results; resources are not limited to machinery. Goals answer the question, "What is to be achieved in common with colleagues?" Evaluation answers the question, "How will success be recognized and measured." Communication is simply making sure that all concerned are aware of mutual goals and their current status of attainment.

In this systematic context, structure is not seen as an excuse for stagnation or complacency. Structure is one of many possible ways to achieve effective work habits. Responsibilities can lead to praise and suggestions as well as to criticism in the constructive sense of the term; realignment is a very adaptable method of defusing human defensive tendencies. Authority can then stress, in addition to its built-in dimensions of power and coercion, the more appealing parameters of reasonableness and responsiveness which provide the security necessary to keep any system from falling apart.

In such a systems approach, educators will be bound together by many common goals and experiences which boil down to dedication. This dedication to education expresses itself in a willingness on the part of students to learn and to make the effort necessary to learn.

The inauguration of a systems approach is in some ways easy, and in other ways difficult. Not everyone comes up with a fully effective system the first time around. Yet, most people do operate with some kind of systematic approach even in the midst of chaos. On the other hand, an integrated system is like the proverbial side of a barn. It is easy to hit, but it is often quite difficult to hit the particular spot at which a person may be aiming. The above pages have tried to show how to hit more accurately the particular part at which a person may be aiming. The above pages have tried to point out a few possible beginnings for typical cla sroom teachers.

The systems approach in education boils down to "looking at the full picture in the context of a given learning environment." There are other ways to develop a functioning system; these will be seen in the next example which gives additional stress to learning and evaluation opportunities.

SECTION IV

AN EXAMPLE OF WHAT ONE TEACHER DID AFTER READING SECTION III

Here is another example that may clarify the individualization process as herein delineated. It shows what one advertising teacher did to make his course goals more specific, measurable, and more teachable. He did this his own way after reading the example in section III describing what one auto-mechanics teacher did.

He wrote for step one: "Advertising Behavioral Objectives: At the end of this lesson I want my students to understand the part that advertising plays in our economy. I want them to be able to do the following in their own words:

a. Identify some contributions of advertising to the economy.

b. Give specific examples of the different types of advertisers.

c. List at least five reasons why people advertise.

d. Specify the various audiences advertisers want to influence."

For step two, he wrote, "I want my students to understand the definitions and purposes of advertising. This means that most of them will master the following subject matter:

A. Definition

1. Advertising means presenting information and facts about a product or service. This presentation is not called advertising when it is done face-to-face.
2. If we didn't have advertising, we wouldn't have much chance for selling. Teaching Suggestion: I have students tell me products they learned of only through advertising.
3. The communications arm of marketing is advertising.
4. Another definition of advertising is the size and scope of the advertising business. Teaching Suggestion: I elicit definitions from students which naturally lead to the above statements.

Teaching Resources:
1) Neil Borden, The Marketing Mix, Harvard Review.
2) The Advertising Age.
3) The A.A.A.A.
4) The Advertising Research Foundation.

Testing Suggestion: Students should be able to give examples of advertising found in TV, newspapers, and magazines.

B. Purposes of Advertising

1. Information is provided to the consumer.
2. Sales volume and profits increase.
3. Resellers start to notice how some brands sell better.
4. Marketing goals can be implemented and based on predictable data.
5. Consumption of a particular product or service increases.
6. New products are introduced.
7. Communication between manufacturer and consumer is facilitated.

Testing Suggestion: The student should be able to recall at least five general goals of advertising.

Teaching Suggestion: The check-off sheet I have developed for probe-interviews with retailers is available in mimeograph."

NOTE: TO WRITE OR NOT TO WRITE

As can be easily noted, the emphasis in the above two sections in on subject matter and content. There is nothing wrong with this. However, it is the point of view of this article that teachers and students alike benefit when they shift gears from subject matter to goals and objectives. A shift of gears is a shift of emphasis.

It must be underlined that the emphasis is on shifting gears from content to objectives. The emphasis is not on shifting gears from "writing less" to "writing more." The mental activity on the part of the typical teacher who organizes classroom performance according to the format herein advocated is enough to turn average students into aggressive learners. Aggressive learners are students who know what they want to learn, who know how to learn, and who know how to evaluate what they have learned. On the other hand, there is no harm in writing out goals if writing helps teachers and students. Writing is not equally necessary for everyone. There are many people for whom the process of rethinking their objectives is done more effectively when paperwork is kept to a minimum.

In establishing objectives, decision-making has a higher priority than writing or typing statements of objectives.

SHIFTING GEARS FROM SUBJECT MATTER AND CONTENT TO GOALS AND MEASURABLE OBJECTIVES

Analysis of the preceding advertising goals reveals that this teacher is quite aware of two classroom necessities: teaching suggestions and testing suggestions. From the format of his presentation, it would be natural to assume that this teacher has learning resources (teaching suggestions) and evaluation instruments (testing suggestions) for every segment of subject matter and content. He has developed during his teaching career a number of evaluation tools and a number of instructional resources. He lists only a few of them. The unlisted evaluation and the unlisted resources are not readily available to other teachers who have no access to all this experience.

The following section tries to overcome this communications gap. It does this by taking this advertising material and changing it into a format that will help other teachers benefit from the long experience of this teacher.

There are many places to begin this resolution of the communications gap. Step seven suggests a systematic way to begin.

Step seven: the teacher answers the following questions to specify objectives for each part of his answer to step six or for each major goal area in his existing materials:

- The KO Question: (KNOWLEDGE OBJECTIVES)
  "What should learners know after achieving this goal?"
- The PO Question: (PERFORMANCE OBJECTIVES)
  "What can learners do to apply this knowledge?"
- The AO Question: (ATTITUDE OBJECTIVES)
  "What attitudes help learners most in mastering and applying this goal?"

DISPLAY 9a

SAMPLE ANSWERS TO THE KO, PO, AND AO QUESTIONS

KO	PO	AO
Qn: What should learners <u>know</u> after achieving this goal?	Qn: What can learners <u>do</u> to apply this knowledge?	Qn: What <u>attitudes</u> help learners most in mastering and applying this goal?
Ans: <u>List</u> at least five reasons why people advertise	Ans: <u>Ask</u> retailer-owner why he advertises	Ans: <u>Become aware</u> of the vast amount of advertising in mass media
<u>Give</u> specific examples of the different kinds of advertisers	<u>Log</u> typical TV advertisements	<u>Place</u> the volume of advertising in perspective

These first attempts to answer the KO, PO, and AO questions are subject to revision. The following pages illustrate how further reflection can improve objectives. The improvements made in display 9a will be reflected in display 9b.

The typical teacher finds it easy to answer the KO, PO, and AO questions. There is one advantage to using tiny squares to answer these three questions: reducing the amount of space available forces the teacher to use brevity and clarity rather than a large number of unnecessary words.

Many teachers prefer to write and rewrite their responses to these three questions. In order to illustrate this reflective process, each question will be taken in detail.

THE KO QUESTION:

Most teachers understand the following KO question almost immediately: "What should learners know after achieving this goal?" The hard part is in specifying exactly what each individual teacher means by the vague term, "know."

The advertising teacher in this example decides upon further reflection that he wants his students to be able to "recall at least five general purposes of advertising." Similarily, he feels it is important that they be able to pick up magazines, newspapers, and other media and "give examples of purposes of advertising."

These further editing changes will be reflected in step 8, in which the teacher moves from objectives to evaluations. Before going on to step 8, improvements in the PO question and the AO question will be looked at in detail.

THE PO QUESTION:

To pinpoint his performance objectives the advertising teacher asks himself, "What can learners do to apply this knowledge?" This teacher is looking for performance objectives that go beyond the obvious activities of listening in class, taking class notes, studying texts, and doing written homework.

Discussing this question with average students convinces this advertising teacher that it is educationally feasible and profitable for several students to "visit a retailer-owner and to probe why he advertises." Other students in the classroom have the choice of "watching TV from 7:00 p.m. to 8:00 p.m. and of logging the advertizements."

There is nothing in the format of step 7 that prevents any teacher from asking the PO question before the KO question. This advertising teacher, whose written goals tended to overstress knowledge objectives and almost overlook performance objectives finds it easier to answer the PO question after the KO question. In his case, the PO question naturally leads to student motivation, the essence of the AO question.

THE AO QUESTION:

In order to trigger student motivation through appropriate attitude objectives, the advertising teacher asks himself, "What attitudes help learners most in mastering and applying this goal?" This question does not imply that there are certain things every person can be made to like or to feel. This question simply accepts the common sense fact that the person with the "right attitudes" can often out-perform the person who is shrugged off with, "Oh, he's smart enough and competent enough, but very few people would ever hire him because they don't like his attitude."

Discussions with colleagues and students help convince the advertising teachers that learners need to realize that advertising is more than "selling and telling." He wants learners to see both sides of profit: (1) making for oneself, and (2) giving necessary services to the consumer.

So far, this advertising teacher uses the KO, PO, and AO questions in order to specify more concretely exactly what is meant by the more general goal won. This teacher is now ready for step 8 which considers necessary evaluation processes.

STEP 8:

The teacher answers the following evaluation questions for each part of his answer to step 7, or for each major goal area of his existing materials:

- THE KE QUESTION: (KNOWLEDGE EVALUATIONS): "How can well informed learners be distinguished from uninformed beginners?"
- THE PE QUESTION: (PERFORMANCE EVALUATIONS): "How can learners distinguish between the various degrees of success?"
- THE AE QUESTION: (ATTITUDE EVALUATIONS): "How can attitude evaluation be made less subject to individual whim and prejudice?"

The advertising teacher answers these evaluation questions by reviewing his lesson plan and extracting the material found in display 9a.

DISPLAY 9b

SHORT ANSWERS TO THE KE, PE, AND AE QUESTIONS

KO	PO	AO
Qn: How can well informed learners be distinguished from uninformed beginners?	Qn: How can learners distinguish between the various degrees of success?	Qn: How can attitude evaluation be made less subject to individual whim and prejudice?
Ans: Recall at least five general purposes of advertising Give examples of purposes of advertising	Ans: Visit a retailer-owner and probe why he adver...ses Watch TV from 7 p.m. to 8 p.m. and log the advertisements	Ans: Become aware that advertising is more than selling and telling Appreciate humor and economic values of advertising
KE	**PE**	**AE**
Qn: How can well informed learners be distinguished from uninformed beginners?	Qn: How can learners distinguish between the various degrees of success?	Qn: How can attitude evaluation be made less subject to individual whim and prejudice?
Ans: Succeed on at least 7 out of 10 multiple choice questions Respond correctly to questions in class	Ans: Convince peers that one's probe was adequate Make an oral report in class	Ans: Pass on one's enthusiasm to the class Create worthwhile class activities

First of all, the advertising teacher writes his answers which are summarized in display 9b. Next, he again reflects upon these answers in order to improve them. Each of these questions is considered in detail in the following paragragh. As in the case of first attempt KO, PO, and AO answers, it is to be expected that these first attempts at KE, PE, and AE answers will be revised.

THE KE QUESTION:

In order to provide adequate knowledge evaluation, the advertising teacher asks himself, "How can well informed learners be distinguished from uninformed beginners?" This type of question forces the teacher to reflect upon what he is doing and upon what he should be doing.

Without too much difficulty, the teacher answers, "It all depends. Sometimes, oral exams are enough. At other times, written are necessary." Knowledge evaluation is one area where teachers can profit from the examination files of colleagues. This exchange of material benefits both teachers.

When teachers begin to exchange knowledge evaluation items, the question of performance evaluation is sure to enter into the discussion.

THE PE QUESTION:

In order to provide effective performance evaluation, the advertising teacher asks himself, "How can learners distinguish between the various degrees of success?" A written test is irrelevant to performance evaluation. Since most performances to be evaluated go beyond the ability to write.

With this in mind, it occurs to the advertising teacher that a class report subject to peer evaluation will help distinguish between the good talkers and those students who really learn how to do something new as the result of this particular objective. The teacher also realizes this is the place to incorporate evaluation instruments he picks up from other teachers.

This emphasis on knowledge evaluation and performance evaluation naturally enough leads to attitude evaluation.

THE AE QUESTION:

To develop relevant attitude evaluation, the advertising teacher asks himself, "How can attitude evaluation be made less subject to individual whim and prejudice." At this point, the teacher feels that it might be more effective to sound out peer group evaluations than to impose his own criteria.

The teacher decides that a good way to get student attitudes and feelings is to have them "recount an advertisement that turns a number of them on." Without getting into depth psychology, he feels it is a good idea to let students develop on their own a number of "creative student chosen evaluation activities" which could serve as the yardsticks for measuring and individual and group success.

STEP 9:

The teacher answers the following resource questions based upon his response to step eight or based upon existing materials he has developed:

- THE KR QUESTION: (KNOWLEDGE RESOURCES): "What resources have been found effective in conveying basic data and insights to learners?"
- THE PR QUESTION: (PERFORMANCE RESOURCES): "What can be done to activate learners to function effectively on their own?"
- THE AR QUESTION: (ATTITUDE RESOURCES): "What can students do together to develop the give-and-take necessary to foster good attitudes?"

The answers given to these questions from step nine by the advertising teacher are summarized in display 9c. This display repeats the material summarized from display 9a and display 9b in a different fashion in order to show the gradual change that occurs as a teacher individualizes his lessons.

DISPLAY 9c

ANSWERS TO KR, PR, AND AR

KO Qn: What should learners know after achieving this goal? Ans: List at least five reasons why people advertise Give specific examples of the different kinds of advertisers	PO Qn: What can learners do to apply this knowledge? Ans: Ask retailer-owner why he advertises Log typical TV advertisements	AO Qn: What attitudes help learners most in mastering and applying this goal? Ans: Become aware of the vast amount of advertising in mass media Place the volume of advertising in perspective
KE Qn: How can well informed learners be distinguished from informed beginners? Ans: Oral test Written test	PE Qn: How can learners distinguish between the various degrees of success? Ans: Make an oral report Participate in peer evaluation of class reports	AE Qn: How can attitude evaluation be made less subject to individual whim and prejudice? Ans: Recount an advertisement that turns learners on. Create student-chosen evaluation activities.
KR Qn: What resources have been found effective in conveying basic data and insights to learners? Ans: Mass media AV aids	PR Qn: What can be done to activate learners to function effectively on their own? Ans: Sample interviews How-to-do-it procedures	AR Qn: What can students do together to develop the give-and-take necessary to foster good attitudes? Ans: Class discussion Group activities

The information summarized in display 9c illustrates the activities envisioned by the advertising teacher. As the advertising teacher looks over the entire scope of display 9c, he begins to edit and revise his answers to step nine. Each of these revisions is considered in detail in the following paragraphs.

THE KR QUESTION:

In order to identify valuable knowledge resources, the advertising teacher asks himself, "What resources have been found effective in conveying basic data and insights to learners?" This question is intended to pinpoint media, techniques, and resources that have been helpful in assisting students to achieve knowledge objectives. This question assists the teacher in reflecting back upon the number of newspaper clippings, magazine advertisements, articles in trade journals, examples from TV, recordings of radio commercials, videotapes, and other illustrative commercials he has amass in the course of his teaching career. All of this material genuinely deserves the name of knowledge resources.

THE PR QUESTION:

- THE PR QUESTION: (PERFORMANCE RESOURCES): "What can be done to activate learners to function effectively on their own?"

This question admits the limitation of talks and explanations as far as performance objectives are concerned.

This question causes the advertising teacher to recall last year when he used the probe-interview and TV watching techniques with little success. These performance resources didn't work because most students reported to the class that they didn't know what to ask the retailer-owner once they got into the store. Others had no idea what to write as they watched TV commercials. This leads the teacher to include a check-list of questions that can be used by learners in preparing their own probe-interview. Similary, the class developed together a recording form with which to analyze TV advertisements.

All of this activity in developing knowledge resources and performance resources is a good improvement to the development of attitude resources.

THE AR QUESTION:

In order to specify appropriate attitude resources, the teacher asks himself, "What can students do together to develop give-and-take necessary to foster good attitudes?" This attitude resource question is a combination of "What has worked in the past?" and "What will probably work with the students currently enrolled?"

This teacher decides that "role playing" will give students insight into what is involved in choosing a particular type of advertisement for a specific purpose. In like manner, "advertisement watching" is perhaps one of the best stimulates and catayst of student attitudes. In addition, teachers find that "brainstorming" teaches learners how to evaluate their attitudes and the attitudes of their peers.

Steps 7, 8, and 9 provide the typical teacher with an analytical framework with which lessons can be made more systematic and more individualized to individual students. This format is open-ended. It presumes and expects each teacher to come up with different approaches. This list specifies the repertoire from which a teacher chooses. It doesn't intend to tie teachers down to an endless repetition of the same examination question and learning resources year in and year out.

Teachers who go through steps 7, 8, and 9 are now ready to summarize this process in a much more rapid overview. Display 10 is provided for this purpose. This display provides questions that can be used to correlate objectives, evaluation tools, and instructional resources.

QUESTIONS THAT CAN BE USED TO DEVELOP CORRELATED OBJECTIVES,

EVALUATION TOOLS, AND INSTRUCTIONAL RESOURCES

DISPLAY 10

	KNOWLEDGE (Information)	PERFORMANCE (Training)	ATTITUDE (Motivation)
OBJECTIVE (TARGETS)	KO "What should learners know after achieving this goal?" KNOWLEDGE OBJECTIVES	PO "What can learners do to apply this knowledge?" PERFORMANCE OBJECTIVES	AO "What attitudes help learners most in mastering and applying this goal?" ATTITUDE OBJECTIVES
EVALUATION (TESTS)	KE "How can well informed learners be distinguished from uninformed beginners?" KNOWLEDGE EVALUATIONS	PE "How can learners distinguish between the various degrees of success?" PERFORMANCE EVALUATIONS	AE "How can attitude evaluation be made less subject to individual whim and prejudice?" ATTITUDE EVALUATIONS
RESOURCES (TECHNOLOGY)	KR "What resources have been found effective in conveying basic data and insights to learners?" KNOWLEDGE RESOURCES	PR "What can be done to activate learners to function effectively on their own?" PERFORMANCE RESOURCES	AR "What can students do together to develop the give-and-take necessary to foster good attitudes?" ATTITUDE RESOURCES
	(Principles) (Cognitive)	(Techniques) (Psychomotor)	(Human Relations) (Affective)

SECTION V

AN INFORMAL EXAMPLE OF HOW THE MATRIX HELPS A TEACHER GO FROM ONE RESOURCE TO A FULLY DEVELOPED UNIT

It is not unusual for a teacher to read the preceding sections without applying them. Sometimes the reason is lack of time. At other times, the teacher prefers a much more rapid application of what has been learned.

Rather than write out steps 1-5 as indicated in the previous sections, a teacher of allied health brings a number of empty alcohol bottles to class. This is the teacher's way of coming up with photographable goals. It is the teacher's intention to use these bottles for legitimate educational purposes.

Some fellow teachers do not understand how these empty alcohol bottles fit into the allied health curriculum. The teacher who developed this application is not able to reply in precise terminology. However, this teacher feels that there is a definite purpose behind the classroom activity in which these empty bottles play a significant role. As a matter of record, this teacher feels that the educational impact upon students provided by this particular educational resource is worth explicating by use of the matrix. The difficulty is that this teacher does not know where to begin.

This teacher talks over with colleagues the activities connected with passing out the empty alcohol bottles in class. A certain amount of group discussion reveals the fact that these activities can be classified in the KR or KNOWLEDGE RESOURCE component of the matrix.

Further questions about classroom activities reveal that the KR component can be completed with the following activities, "Pass out bottles" and "Discuss unusual vocabulary."

Further questioning leads this teacher to fill in the matrix as it appears on one of the following pages. This matrix entitled, READ THE LABEL ON MEDICINE, gives an example of what can be done in approximately 20 minutes by anyone who wishes to apply the principles and criteria of the preceding sections.

There are other ways to use the matrix to become more learner-centered. After writing in the words, "Pass out bottles," in the KR component, the teacher looks at what is written. Further reflections reveals that this expression is teacher-centered. In other words, it is the teacher who passes out the bottles.

It is easy to make the transformation from teacher-centered verbs to learner-centered verbs. This change is done by substituting "examine" for "pass out." Thus, students will both "examine the bottles" and "discuss unusual vocabulary."

The verbs examine and discuss refer to knowledge resources. By inquiring why these knowledge resources are important, it is a simple step to come up with knowledge objectives. One knowledge objective is to enable students to "read labels properly." Another knowledge objective is to enable students to "discuss the implications of each label."

When the KR and the KO components are completed, the next logical question is to fill in the KE component by asking, "How can this knowledge objective be evaluated?"

READ THE LABEL ON MEDICINE

KO **Read** labels properly **Discuss** the implications of each label	**PO** **Act** after finding our "why" **Follow** directions and typical professional procedures	**AO** **Avoid** all abuse of alcohol **Use** alcohol moderately **Make** a personal decision **Avoid** stupid misreadings
KE **Pinpoint** what is already known **Ask** the right questions to make appropriate progress	**PE** **Simulate** few common cases of misread labels **Pick up** new information properly	**AE** **Enjoy** thoroughness **Sharpen** common sense through case studies
KR **Examine** the bottles **Discuss** unusual vocabulary	**PR** **Examine** a few real and simulated labels **Bring in** common labels for group reaction	**AR** **Talk** through value choices **Listen** to testimony of experts

SECTION VI

AN EXAMPLE OF HOW TO GO FROM THE DISCOVERY METHOD TO A WELL ROUNDED UNIT

The following matrix, FIGURE OUT YOUR PAY, is the development of a teacher who used this document in order to develop a rationale for a problem solving approach to the discovery method.

This teacher firmly believes that it is better for both teacher and learner if learners learn by trial and error. It is better for learners to do things the wrong way, to take the consequences, and to correct mistakes rather than to memorize a few rules that could be easily forgotten or misapplied. This teacher wishes to explicate the lessons that can be learned by the errors encountered in the school of experience. This teacher wants all error sources to be anticipated before before such easy to make errors prove fatal on the job.

The honest reaction of this teacher to his first exposure to the matrix is easy to describe: he considered the matrix irrelevant to his instructional objective. Being of a curious nature, this teacher decided to give the matrix a try anyway.

The first step in filling out the matrix is to place "figure out total pay" in the performance objective or PO component of the matrix.

Attempts to answer the matrix questions summarized in display 9 produced the following matrix entitled FIGURE OUT YOUR PAY. Discussion of the finished matrix with colleagues led this teacher to realize that attitude objectives were just as important to this approach as the performance objective of figuring out total pay. In other words, the performance objective of figuring out total pay and the employment of the discovery method were simply means of achieving higher level attitude objectives. In this case, the matrix was used to go beyond individual lesson plans in order to stress job-worthy and expandable career goals.

FIGURE OUT YOUR PAY

KO	PO	AO
Differenciate total pay from net pay Recognize the wrong way (and avoid it) and the right way (do it fast)	Figure out total pay quickly and accurately Apply problem solving techniques	Earn money to live Value honesty and integrety on the job Build up reputation as an honest craftsman
KE	**PE**	**AE**
Multiply accurately Add up results	Calculate a few typical total bills Fill out a bill and receipt Demonstrate an accurate rough estimation and exact total to the class	Care enough to avoid wasting time Figure things out for one-self
KR	**PR**	**AR**
Add up typical figures such as hours worked and wage per. hour Multiply typical rates by hours Review rough estimating	Examine data in a few typical examples Discover the fast method View a film on total pay Question a visiting craftsman	Realize there are only five minutes at the end of a job to clean up and bill the customer Calculate each wasted minute in terms of money and reputation

There is nothing in the matrix to prevent a teacher from further developing course goals into the typical behavior objective format. Typical behavior objective format is defined as the process of explicating three parts for every behavior objective: conditions, performances, and criteria or extent.

The conditions of a behavior objective spell out the circumstances, tools, or environment that are an essential part of the desired outcome. The performance of a behavior objective specifies the verb and activity the learner will be doing upon successful completion of the objective. The criteria or extent of an evaluation spell out the evaluation standards that will be used to determine success on the part of the learner.

In answer to the conditions question, the teacher replied: "The learner will be told the hourly pay rate, the total number of hours worked, and the overtime pay scale."

In answer to the performance question, the teacher replied: "The learner will be expected to figure out total pay." In answer to the criteria or extent question, the teacher replied: "The learner will be expected to do this quickly and accurately. Quickly means less than five minutes. Accurately means with less than a one cent error."

The result of this fuller development of the behavior objectives can be summed up as follows:

CONDITION: Given:

1. hourly pay rate
2. hours worked
3. overtime pay scale

PERFORMANCE: The successful learner will:

figure out total pay

CRITERIA OR EXTENT: Evaluation will be made according to the following criteria:

1. quick (five minutes or less)
2. accurately (less than one cent error)

SECTION VII

AN EXAMPLE OF HOW THE MATRIX AIDS IN THE TRANSFORMATION OF AN IMPOSSIBLE OBSERVATION TASK INTO A MANAGABLE SERIES OF CORRECTIONS

A cosmetology teacher who read the preliminary edition of this document was in favor of performance objectives even before coming in contact with this document. With this in mind, the problem of stating course goals in the knowledge, performance, and attitude domains was already solved. The remaining unsolved problem was what to do about evaluation.

In other words, this teacher had a very simple performance objective, "conduct the patch test." The difficulty was that each student apparently had to be observed by the teacher in order to make sure that this patch test had been done properly, legally, and safely.

There was no difficulty in deciding what belonged in the PO component of the matrix since "conduct the patch test" was the most obvious performance objective. Similarly, it was quite easy to decide that "past teacher's observation" was the appropriate item to place in the PE component. The difficulty here was that it took a large amount of time for the teacher to individually observe each student perform the patch test. In order to overcome this difficulty, the teacher was asked to specify exactly what was looked for during the observation of the patch test. The four criteria looked for by the teacher were placed in the extent portion of the PO component of the matrix. The answer to the question, "What conditions or equipment will be permitted the student during this performance?" furnished the content for the condition part of the PO component.

After this initial experience, the teacher was able to complete the matrix as it appears on the following page in less than 20 minutes.

PROTECT AND TEST BEFORE BEAUTIFYING

KO	PO	AO
Review how federal laws direct and protect beauticians and clients Realize possible consequences of hate and unauthorized procedures	Condition: given: 1. liquid hair treatment or conditioner 2. Useless directions 3. Subject Performance: conduct patch test Extent: 1. small amount (2-3 drops) 2. 1/4 cubic centimeter (small area) 3. 24 hour testing time 4. all reactions noted	Observe federal laws Respect clients right to health and comfort Avoid all possible dangers Make sure no one has an allergy or hypersensitivity and sues
KE	**PE**	**AE**
Pass paper and pencil tests (multiple choice, true false, matching) Recite typical precautions	Pass teacher's observation Observe peers	Develop professional pride Look out for the customer Take no chances
KR	**PR**	**AR**
Read textbook View safety film Listen to illustrative cases	Watch teacher demonstration Try to imitate teacher Explain proper method to peers	Simulate a case of "malpractice" Role play a few common pressure cases

CONCLUSION

This conclusion can be summed up in two words: bibliography and self-evaluation.

For those who want more reading references, the bibliography appearing on page 68 provides the ED request numbers for several related documents that appear in the ERIC microfiche system.

For those who want an idea of how accurately this document has been interpreted, a sample matrix has been provided on page 69 which interested educators may fill out by answering the questions on page 58. The completed matrix may be compared with samples appearing on pages 30, 33, 36, 46, 50, 54, 61, 63, and 66 to self-evaluate. Similarly, the completed matrix may be mailed to:

for a professional evaluation.

BIBLIOGRAPHY

RECOMMENDED PUBLICATIONS

The following MICROFICHE in the ERIC collection and summarized in RESEARCH IN EDUCATION (RIE) are called to the attention of educators wishing to update staff and learning centers :

ERIC CODE	CONTENTS
ED 056-994	HOW TO CLARIFY INSTRUCTIONAL GOALS
ED 074-032	HOW TO INDIVIDUALIZE CLASSROOM INSTRUCTIONAL GOALS
ED 086-988	HOW TO KEEP EDUCATIONAL RESEARCH FROM GATHERING DUST ON A SHELF
ED 088-861	PLANNING AND IN-SERVICE EDUCATION
ED 085-354	CHECKLIST ON HOW TO TAKE A GOAL APART AND HOW TO PUT IT BACK TOGETHER IN AN INSTRUCTIONAL SYSTEM
ED 090-175	SEVEN STEPS TO BETTER OBJECTIVES
ED 090-227	ROLE OF THE RESPONSIBLE LEADER IN DEVELOPING TEACHER-PREPARED RESEARCH
ED 090-976	CISNE - COMPUTERIZED INFORMATION SYSTEM FOR NURSING EDUCATORS
ED	EVALUATING COOPERATIVE EDUCATION
ED	LEADERSHIP BY REINFORCEMENT
ED 092-595	AN EVALUATION SYSTEM THAT DOESN'T REQUIRE HYPER-EXPERTS

S E L F - E V A L U A T I O N

THE TRAINING MATRIX